

Misalignment of Learning Contexts - an explanation of the Chinese Learner Paradox.

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Abstract

There is considerable research evidence (e.g. Biggs 1991, Watkins *et al* 1990, Kember *et al* 1991) to suggest that East Asian learners exhibit superior learning styles and academic performance to their western counterparts at secondary and tertiary levels. This is a surprising outcome given the less favourable educational environment of most East Asian societies (such as large class size, expository teaching methodology, highly competitive exam system and exam-oriented curriculum) which, according to educational literature, is more conducive to surface learning and atomistic learning outcome. This seemingly contradictory situation, known as the Chinese Learner Paradox (Marton *et al*, 1993), has been the subject of quantitative and qualitative educational researches since the late 1980s. However, existing research has tended not to examine the impacts of different assessment regimes (i.e. exam essay, short answer question, MCQ test, term essay, reflective journal, practicum etc) on the learning process. More specifically, they did not investigate the interaction of learning approaches with assessment types in influencing learning outcomes in cross-cultural studies.

In this study intensive semi-structured interviews were conducted with 10 tertiary students, consisting of 5 East Asian and 5 local Australian students in Brisbane, the overriding aim being to investigate their ideas of learning, and their approaches to learning for written assignments and for exams, to establish whether cultural difference is a determining influence on the learning process. Preliminary results suggest a different way of interpreting and explaining the paradox.

Introduction

There is a significant body of empirical evidence (Biggs, 1991; Kember & Gow, 1991; Watkins & *et al.*, 1991) to suggest that East Asian learners exhibit superior learning styles and academic performance to their Western counterparts at secondary and tertiary levels, despite the less favourable educational environment of most East Asian societies (such as large class size, a highly competitive examination system and an examination-oriented curriculum) which, according to educational literature, is more conducive to surface learning and atomistic learning outcome, and the predominant use of expository teaching methods. This seemingly contradictory observation is known as the paradox of the Chinese learner (Marton, Dall'Alba, & Tse, 1996). The 'Chinese learner' refers to learner in East Asian societies with a Chinese heritage culture. These societies mainly include China, Taiwan, Hong Kong, Japan, Korean, Singapore, Malaysia, Indonesia, Thailand, and Vietnam.

The superior academic performance of East Asian students, according to Biggs, (1990, 1991) is the outcome of a deep learning approach, which is the result of a combination of favourable cultural and linguistic factors. When Western educators describe them as rote-learners, this is based on their belief that memorisation and understanding are opposites, and that repetitive learning is rote-learning. Marton and his colleagues (Marton *et al.*, 1996; Marton & *et al.*, 1997) claim that the Chinese teachers and students believe memorising and understanding are closely related, one being able to enhance the other. They propose that there is continuity between memorising and understanding, and that this provides the basis for a solution to the paradox of the Chinese learner.

The paper, based on intensive analysis of interview data with 10 tertiary level students in Australia, will examine the relations between memorising and understanding as learning strategies in two learning contexts – learning in general and learning for an examination. Three ways of memorising material for an examination are identified. In the general learning context, evidence is found for the existence of continuity between memorising and understanding. But we offer a different interpretation to that put forward by Marton et al. (1997) to provide an alternative explanation for the Chinese learner paradox.

Methodology

The subjects in this interview study consist of six Australian students (one of Chinese decent and the other five of European background), and four East Asian students (one Japanese newly-arrived permanent resident, and three Hong Kong overseas full-fee paying students). They were enrolled in four courses: Diploma in Marketing (3), Bachelor in Marketing (2), Bachelor in Education (4), and Graduate Diploma in Education (1). The semi-structured interviews were conducted at student's campus or home (typically lasting from 55 to 90 minutes), and they were type-recorded. Six of them were conducted in English and the other four were conducted in Cantonese, translated and transcribed verbatim by the first author.

The interview data was analysed several times to allow for the emergence of similarities and differences in the ways the subjects experienced a phenomenon (e.g. examination preparation), or a concept (e.g. understanding, memorising). This methodology follows as closely as possible the phenomenographic approach (Marton, 1982). The validity of analysis is primarily based on the sense of completeness in our understanding of the student's learning experience in its totality. The usual procedure of relying on inter-rater agreement for validity of categories and classification is not used here because of the preliminary nature of this study.

Results

The section will examine the relationship between memorising and understanding that students experienced in learning for examinations and in general study. The implications of these results will be discussed in the following section.

Memorising and Understanding in the Examination Context

Understandably, in the examination context, a student's learning approach for examination is driven by the need to reproduce the material to answer examination questions. Memorisation as a learning strategy is a common theme in the data. What differentiates students' memorising strategies is *what* is memorised, *how* it is memorised, and, subsequently, the flexibility and effectiveness of utilising the memorised information to answer examination questions.

Types of memorising strategies for examinations

Entwistle and his colleagues (Entwistle, Marton, & Entwistle, 1993; Entwistle & Entwistle, 1991) in their analysis of British final year university students' experiences of understanding during preparation for exams, reported five forms of understanding that varied in their degree

of transformation of knowledge. Tang and Bain (1994) regrouped these five forms of understanding into three, which they referred to as:

- (1) Surface understanding – understanding at the immediate text level.
- (2) Reproductive understanding – understanding of the relational meaning of learning material, but largely in the form provided by the lecturer's notes or textbook.
- (3) Transformative understanding – the student is capable of developing his/her own conception of the discipline and utilising the material learnt generatively in novel situations.

In the examination context, three ways of memorising the material are identified, which differ from each other in terms of the type of understanding the student has obtained.

(1) Rote-memorising the material (with no understanding/surface understanding)

If the student focuses on facts and details and is unable to recognise the underlying principles of a topic, he/she has to rely on mechanical or mnemonic memorisation to commit the material to memory. Since memorising a large quantity of details for an examination would be extremely difficult at university level, Annie would reduce the text to the key terms, or points for recitation.

“In geography, ... there aren't many technical terms as in Psychology. After the lesson, I would read it once, to see firstly if there are any new words, then underline, then look up the dictionary because my English is not very good. Then, ... in the second reading, I would use a red pen to mark the key points. After reading it, I make notes. I write down the important points, notes for my own use. ... When examination comes, when I revise them, I don't have to read the book, I only have to read the notes.”

(Any difficulty?)

“... My English is not good. ... There's sometimes difficulty to understand what does it mean. Sometimes I try to translate to Chinese in my mind. It's hard to understand what does it mean originally in English. ... You've got to read several times.”

(Any other problem with the content?)

“The content ... I often forgot what the earlier part is about.”

(How did you solve the problem?)

“To read several times more and underline. There is some (more difficult part) I just skip and not read it.” [Annie]

That Annie often forgot, recited several times to help remember, and had to omit the more difficult parts of the text, indicates she had obtained little or only surface understanding of the material. Her understanding is confined to the translation meaning of terms or comprehension of details in a disconnected form. Another student Peter, a TAFE (Technical and Further Education) student, like Annie, also selected 'things' to remember and utilised mnemonics to aid memorisation.

“I'm trying to improve my learning capacity. ... Just general things to improve my memory capacity ... because I don't remember things very well. ... If I try to remember things such as Awareness, Interest, Desire and Action – AIDA, you know, very standard. It's easy to remember because you remember AIDA. ... I don't try to learn all what I read. ... The very hard stuff that I found hard, I don't worry about very

much because it's 10% or 15%. I try to get the most out of what I know best. So I won't remember the whole book." [Peter]

(2) Memorising the material with others' structure (reproductive understanding)

Using the second way of memorising, the student obtains relational understanding of the material, which allows more flexible application in exams. The structure that contains the relation of material is generally supplied by the text or lecturer. For example, Tim, a second year university marketing student, would understand and memorise the points in such a way as to allow him to integrate the memorised points and theories to answer 'open questions', a technique he says allows him to 'make a great production'.

"For me, in ordinary time, I did pre-reading during semester. ... Then when examination comes, I'll read again. ... If it needs reciting, then I would memorise it; if not, then I just read it. Now, I think now there is little need of reciting text. Basically you need to know how to write it out in your own words in examination."

(Do you mean 'no need to recite word for word'? But do you have to memorise the points?)

"Yeah, memorise the points. Then in examination, we'd, so to speak, 'make a great production'. ... They will not ask you to list out, say, the steps. They will not ask in such a stupid way. At this level, they will ask open questions to see how well you express and apply, to express what you've learnt in ordinary time." [Tim]

Tim's ability to 'express and apply' in own words implies a relational understanding of the material. From the above statements, there is no indication that Tim imposed his own structure on the material. Another student, Angus, a TAFE marketing student (below), would get a 'general idea', understand 'what it's all about' and go back to focus on the 'key points', before committing them to memory. His going forth and back to identify the key points indicates he is utilising the structure supplied by the text.

"From reading you've got the general idea then going through it more thoroughly ... you get an understanding of what it's all about from reading it, and then you fine tuning it by going back and getting the key points, the key headings, and things like that. ..."

[Angus]

And like Annie, he would try to memorise those key points by 'going over and over the key points, re-writing them until I can re-write it all.'

(3) Memorising the material with own-structure (transformative understanding)

It is interesting to note that Kelvin, a graduate diploma student in education, using the third and most sophisticated way of learning for examination, also places equal emphasis on memorising.

"Well, basically how I prepare for examination is that I get the lecture notes, I rote-learn them for about two days before the examination."

[Kelvin]

Despite using the term 'rote-learn', Kelvin memorised the material with a high level of understanding.

“I’d see what my lecturer’s written, ‘cos they usually are going to put in their notes what’s going to be on the exams. So, I’d obviously use the content of the lecturer’s notes, but the form is my own because I have a very, very structured sort of mind, like things fitting into place, you know, like you have points, sub-points and they follow on from each other, and that’s how I learn.” [Kelvin]

Using the lecturer’s notes as a guide, Kelvin would impose his own structure on the material to be ‘rote-learnt’, and organise his own notes in a way that reflected his personal understanding of the topics. This allows not only accurate recall of the essential details but also great flexibility in their application.

Types of memorising and approaches to learning for examination

In several studies (Eizenberg, 1988; Tang, 1992; Tang & Bain, 1994) a finer distinction was found within both the surface and deep approaches to learning, which can better capture the variations of learning experiences, particularly in the examination context. The three ways of memorisation identified in this study match three of these four approaches, viz. restrictive surface/surface-atomistic, elaborative surface/surface-holistic, and elaborative deep/deep-holistic, in terms of the kinds of understanding revealed in the knowledge object to be memorised. (Table 1) The fourth approach – restrictive deep/deep-atomistic – represents a non-examination oriented approach, in which the student has developed a deep understanding of the subject in general study, but does not organise the material to efficiently tackle examination questions.

Types of memorising	Approaches	
	(Tang, 1992)	(Eizenberg, 1988)
Memorising with surface or little understanding	Restrictive Surface	Surface- atomistic
Memorising with reproductive understanding	Elaborative Surface	Surface- holistic
Memorising with transformative understanding	Elaborative Deep	Deep-holistic

Table 1 Approaches to Learning for examinations and Types of Memorising

Memorising and Understanding in General Learning Context

While learning for examination is dominated by memorisation with an intention to reproduce, in their daily learning or learning for an assignment, students have no immediate reason to memorise the learning material. In the examination context, the level of understanding of knowledge is usually pre-determined before memorising, and memorising is for its accurate and effective retrieval. However, in the general learning context, the relation between memorisation and understanding is very different. Here, the logical relations between the act of learning, what the act yields (nature of knowledge) and what the learner can do with the knowledge, at different levels of depth will be analysed, by using the two-dimensional outcome space for learning model, that Marton and his colleagues (Marton & et al., 1997) developed to describe the relation between memorising and understanding.

Ways of Learning and Resulted Nature of Knowledge

(1) Learning by taking in

Here, the learner learns by focussing on and taking in the surface features of the text, and learning occurs if the learner has memory of the material. The knowledge resulted will be disconnected details– a surface learning outcome. Rex (below) described this experience of memory in his general study at beginning of term.

“Each time after lecture, I’d read the textbook, notes, the materials taught. ...”

(After reading, then that’s it? Is it all?)

“Well, you would also remember it. It doesn’t make sense that you have no memory, no impression. If it’s like that, then it’s useless.”

(Well, you’ll also remember it.)

“Yeah, but I wouldn’t memorise too deeply.” [Rex]

The outcome of this way of learning is a vague “impression” of the material in the head. Learning this way, the learner may be able to recall some facts or details, but can only apply the knowledge in straight-forward situations.

(2) Learning by active memorising

If the learner makes an effort to commit the material to memory (e.g. by recitation) in their general learning, the result would be “a greater impression” of the knowledge. The learner can more accurately recall more facts and details, but their application is still very restricted, confining to fill-in-the blank, and definition-type questions. Annie, a Chinese overseas student with limited English proficiency, like Rex, would read text in her daily study but “memorise with force” only in the revision week.

“I read once a week. On ordinary day, I won’t memorise with as much force. But before examination, I will memorise with great force.” [Annie]

Learning by making an effort to memorise, as expected, is reserved for the examination revision, and none of the students in this study reported using this way of learning in general learning. One example was given by Maisie in her interview when told of a classmate of hers at TAFE who desperately learnt by drumming in knowledge with great effort, but without much success.

“I feel that studying by rote doesn’t work. ... There is a young boy, not yet 20. When he came here, he had great difficulty catching up with the English language. ... He’s very hard working. Every night, even at beginning of semester, he could study until 2 to 3 am. He recites the text, but he’s unable to understand and absorb, and just couldn’t help.”

(3) Learning by seeking deep meaning of text

If the learner learns by looking for the intent of the author, or the underlying principle or message of the text, then he would recognise the hierarchical structure of the learning

material, and the knowledge obtained would be holistic understanding of the topic. The learner is capable of applying the knowledge flexibly.

“If I don’t understand anything, I’d grab someone to ask. This is very important.”

(What method did you use to help yourself obtain deep understanding?)

“Sometimes the things that you learn are very abstract, all are theories. If you don’t apply them, they are mere words in the textbook. You really have to apply them before [understanding] is possible.” [Maisie]

Maisie also described how she integrated the textbook theories with her work experience as a marketing manager in Hong Kong. Learning this way, the information will be linked onto the cognitive scheme of the learner. Students experiencing learning by understanding also reported that the thing that they have learnt will be in their ‘sub-consciousness’.

“You have to memorise something to learn it I think in a sense. ... When you’re at teaching, there you’re not going to think: Erikson- Oh! Jesus! I’m teaching, you know, there’s according to Erikson, or whatever. You’re not going to be thinking. This is going to be in your sub-conscious. It’s going to be intuitive what you’re doing. All the knowledge that you gain from this place is going to be *there* forever.” [Nicole]

(Author’s emphasis)

When students have obtained the meaning of the material, they would report a sense of permanence of knowledge in their memory – the knowledge is in ‘there’, even though memorising is not used in obtaining it.

(4) Learning by understanding phenomenon

Although Maisie and Nicole (above) learnt by understanding, their focus was still on the text, not on the phenomenon to be understood “through the text” (Marton et al. 1997). In the fourth and most sophisticated way of experiencing learning, there is a shift of focus from the text to the reality, which is absent in the first three way of learning. Kelvin (below) described how he used the knowledge acquired as a ‘tool’ to form his worldview for personal development.

“In the perfect world, learning is understanding. ... You’re involved in the whole semester, you’re interested in what you’re doing. It’s not being able to answer examination questions. It’s knowing how things work. ... From my personal development, in terms of how I view the world, how I view people, it has changed. It has given me a tool to sit back and make up my own mind. Since my being in the university, I’m probably more forthright, more self-confident.” [Kelvin]

The outcome of learning is personal growth, which provides the learner new ways of understanding reality. The way Kelvin experienced learning illustrates both the knowledge phase and application phase of this conception of learning - learning as changing as a person and learning as seeing the world in new lights.

To summarise for this part, we can see that the nature of knowledge obtained depends on what aspect of object is focused upon and how it is learnt. This relation between way of learning and outcome of learning is consistent with the usual deep/surface distinction of

learning approaches (Biggs, 1987). The temporal facets (Marton et al. 1997) of the four ways of experiencing learning are summarised in Table 2.

Object focussed	Knowledge	Application
Surface features	vague impression of details	Simple recall; limited application.
Repetition/Recitation	deeper impression of details	Accurate recall; limited application.
Deep features	Understanding of principles	Flexible application.
Phenomenon	Personal growth	New way of seeing reality.

Table 2 Temporal facets of the four ways of learning

Can memorising enhance understanding?

There is no doubt that repetitive learning activities such as recitation can give the learner a deeper impression of the material. And this is indeed by far the most commonly observed learning strategy in the examination context, regardless of the level of understanding of the material, and regardless of cultures. But, in the general learning context, can a deeper impression of not-understood material lead to understanding? When Western teachers observe East Asian students doing a lot of repetitive learning, one must ask: What kind of memorising and learning are they engaged with?

In the interviews, we asked the students if memorising (e.g. recitation) could help them understanding in general learning situation. From the interview data we discern two views, which are functionally related to their general learning approaches. If the students have an intention to learn to reproduce, they would believe that memorisation cannot enhance understanding.

(Would it be possible that if there is something that we don't understand, can rote-memorising it help us understand?)

"I don't think it can. If you don't understand and depend on rote-memorising, you are reproducing others' material, but you still don't know how to apply it." [Rex]

(Some people said if you memorise something, you can understand it better.)

"Is it so?"

(Do you think so?)

"... I feel there is no help." [Annie]

Rex and Annie, both classified as surface learners, rejected that memorising could enhance understanding, although they both utilised predominantly restrictive surface approach to learning for examinations. They used recitation to deepen memory, but not for understanding. If an effort is made to memorise the material, even though the examination is 3 or 4 months away, its purpose is to enable the material to be more easily drummed in the last week before examination and be more readily recalled in examination.

For the deep learner (e.g. Maisie below), whose intention is to understand, rote-memorising of not-well understood information is believed to be capable of leading to understanding.

“When you don’t understand something, you of course have to memorise it by rote at the beginning. When you memorise a lot, and when you sometimes think about it again, you may get a thorough understanding of it.”

(What is it that you think about?)

“I don’t know what others would do. But for me, if I commit something to memory repeatedly and recall it again and again, I very often will understand what the sentence is about, which I didn’t understand before.” [Maisie]

To Maisie, memorising was not employed for reproduction for examination, but rather as an intermediate step towards developing understanding. This strategy of memorising for understanding (denoted MU1) is not to be confused with a similar memorising strategy involving rote-memorisation or automation of lower order information/skills to facilitate performance and development of a higher order technique (denoted MU2). For example, memorising the times table and periodic table. The intention in MU2 is to automate the lower level skills to free more working memory for handling a more complex task.

The two memorising strategies are similar, but different in one important aspect. The similarity is that the material to be memorised is not well understood, and in both cases, used as a mean to an end. They differ in how the material is utilised. In MU2, it is to facilitate subsequent advanced learning, whereas in MU1, the not well understood material remains the focus of learning; the rote-memorised information is being repeatedly acted/reflected upon or examined from different angles as a result of the learner obtaining more related knowledge about it, or using it in different situations. Maisie described her experience.

“I remember that at the beginning, I studied psychology with a lot of hardship because of the difficult vocabulary. But I have very good memory power. I can easily remember the spelling of very long words. I remember that when I prepared for the mid-term examination, I just forced myself to memorise. But when I prepared for the final examination, maybe after the whole semester, I absorbed more or other methods enabled me to understand the subject, when I went back to chapters 1, 2 and 3, I found I could easily understand what the chapters about.” [Maisie]

Tim gave a more detail explanation of how he thought memorising enhanced understanding (MU1).

“At the beginning when you’ve just learnt a new model or theory, you memorise it. After memorising it, you begin to digest it. ... When using it once, you may not feel ok. May be you’d only remember it. But after using it one or two more times, then you won’t have to memorise it again because it’s in already inside you. You’ve already understood it. Then in future, when you need it, you can utilise it naturally.” (Tim)

The intention to memorise is deep - to eventually get at the deep meaning of the memorised material. Now it is logical that if the learner chooses to focus on the surface aspects of the text, he/she will not believe that rote-memorisation can enhance understanding because MU1 has its focus on the deep features of the text, although ironically rote-memorisation is often his/her preferred learning strategy for exams out of academic necessity.

MU1 - a culturally specific way of learning?

In this study, it is found that MU2 is common to both Western and East Asian students, but MU1 appears to be more prevalent in East Asian than Western societies. This is consistent with endorsement in Chinese societies of recitation and memorisation of texts, poems and classical literature as an appropriate learning strategy particularly in primary and secondary schools (Lee, 1996).

Maisie, a firm believer in MC1, dissected the Chinese characters for 'knowledge' and 'understanding' and gave us her personal interpretation of the relationship between memorising, understanding and knowledge, which we believe reflects a general Chinese belief in learning.

"I think we can explain the two characters – 'tsi' 'sik' [the Chinese word for 'knowledge' is composed of these two characters; 'tsi' is equivalent to 'know' and 'sik' to 'understood']. To know ['Tsi'] doesn't mean you understood [sik]. To know ['tsi'] but not to understand ['sik'] is very bad. ... My teacher used to say: Today I teach you this thing, and you knew it ['tsi'], but if you *don't make an effort* to understand ['sik'], to recognise and accept it, then ... it's your greatest mistake. So to know ['tsi'] and to understand ['sik'] are two stages of learning. ... Whether you understand ['sik'] or not is the student's responsibility, but whether or not you know [tsi] is the teacher's responsibility. If the teacher presents a heap of unrelated things and the students totally don't understand, then they just don't have a chance to understand ['sik']."

(To you, are knowing ['tsi'] and understanding ['sik'] similar or different?)

"They are similar because they only differ in depth. When you know, your understanding may be superficial, not in-depth understanding. But if you completely understood ['sik'] then the knowledge becomes part of your own, not equivalent to the material in the text, not equivalent to what the lecturer said, it's something you've learnt."

(Are to know ['tsi'] and to memorise different?)

"Yes, to know and to memorise are different because when you memorise, it can be rote-memorising. Maybe you totally don't know what it is about. But if you know ['tsi'] and can memorise, it is of course good because you've already received the knowledge." [Maisie]

(Authors' emphasis)

When Maisie talked about 'making an effort to learn' as the student's responsibility, she was referring to a process of thinking about (internalising) knowledge from various ways to obtain 'complete understanding' of it. If a student does not understand the newly learnt material, to memorise it for the time being is a socially endorsed strategy. This strategy of knowledge acquisition is nicely captured by the Chinese poem below:

"To learn but not to think is irresponsibility.
Able to think but not to learn is laziness."

In this poem, the term 'to learn' can be interpreted as 'to take in knowledge' or 'to know'. And 'to think' represents some internal process for deepening understanding of the knowledge taken in. The word 'learning' in Chinese consists of two characters, which represent two stages of learning - taking in or modelling ('hok') and practising ('chap') - in this order. The belief that memorising leads to understanding (MC1) fits in well with this temporal relation between these stages of learning. The evidence from the interview data and our analysis of the embedded meanings of Chinese characters for 'knowledge' and 'learning' shows that memorising for understanding (MU1) could be a culturally specific way of learning.

Discussion

Memorising and Understanding – Continuous or Discontinuous?

In their detail analysis of Hong Kong secondary students' approaches to learning, Marton and his colleagues (1997) observed a transition from learning by rote-memorising in junior secondary school, to learning by understanding in senior secondary school, which is a result of students' reaction to the increasing amount and complexity of information that has to be learnt for examinations. In terms of the act and object of learning, it represents a shift from learning by memorising words/sentence with no or little understanding (rote-memorising), to learning by memorising meaning of the text (memorising meanings), to learning by understanding meaning, and finally to learning by understanding the phenomenon "through the text". According to these researchers, there is a continuum between the two extreme ways of learning because of the intertwined nature of the memorising and understanding, which prompted them to conclude that memorisation and understanding are not opposites in the Chinese educational context. Therefore, when the Chinese learners are seen carrying out a lot of repetitive learning activities, they are not rote-learning; given their cultural endorsement of memorisation as a learning strategy, they are commonly used as a means to understanding. The stereotype of the Chinese learner as a rote learner is therefore a misinterpretation based on the Western educators' belief that memorisation does not lead to understanding. It is upon this use of memorisation to deepen understanding that the solution to the paradox of the Chinese learner is based.

Marton and his colleagues (1996) in an earlier study with Chinese education student teachers, showed that none of the subjects agree memorising alone (i.e. rote-memorising) is real learning. That is, they believe that rote-memorising does not lead to understanding. This finding, which appears to contradict the continuity between memorising and understanding, was indeed used to show that Chinese learners actually use memorising in a way that takes meaning of the text as the object of learning. This is memorising for understanding, and is in sharp contrast to rote-memorising which the Chinese education students reject, but has been incorrectly imputed onto them by Western educators. The following interview protocol, used to illustrate the nature of repetitive learning activities frequently used by Chinese learners to obtain understanding, is almost identical to Maisie's experience of learning psychology discussed earlier.

"The process of repetition, it is not a simple repetition. Because each time I repeat, I would have some new idea of understand, that is to say I can understand better. ... In the process of repeating and memorising in this way, the meaning of a text is grasped more fully." (Marton et al. 1996, P.101)

In the present study we obtain evidence of MU1 at work in general learning but not in learning for examination. In examination preparation, these students (Chinese and Western) all agree recitation facilitates memorisation and retrieval of knowledge, but none of them have reported any experience that this kind of memorising for examination can enhance understanding. There is no cultural difference here. The continuity between memorising and understanding found in the Hong Kong study (Marton et al. 1997) is not observed in the examination context at tertiary education. In the general learning context, however, we found that four out of six East Asian students reported experiences of memorising not-understood material for obtaining understanding (MC1), which gives support to the continuity between memorising and understanding. But we interpret this finding differently to provide a different understanding to the Chinese learner paradox.

First in this study, the two 'surface' Chinese learners did not utilise MC1. When asked if rote-memorising could deepen understanding, they actually denied its possibility. Memorising to these surface learners is rote-memorising, for reproduction for examination. But memorising in MU1 is not rote-learning and the intention is not to reproduce for examination. This highlights the importance of the intention of the learner in determining whether the learner is using MU1 or simply rote-memorising for reproduction. Therefore, it is one thing to say that if a student utilises memorising to enhance understanding (MC1), we can say that his/her intention is deep. But it is quite another to infer that if a student is observed using repetitive learning, his/her intention is to deepen understanding. In other words, there is no automatic mechanism for rote-memorising to lead to understanding.

More importantly, while Western teachers observed a lot of repetitive learning activities, they also reported a lot of rote-learning *outcome* of East Asian students. For example, an education lecturer described the essays of her East Asian students as 'uncritical, unreflective reporting of literature; effort and attempt at coverage are apparent' (Kwan & Tang, 1997). External examiners' comments on the academic performance of students at Hong Kong University include: 'regurgitative, with little insight and understanding of the subject in question', 'differences between better and poorer students being reflected in more effective recall than in qualitative factors' (Biggs, 1990).

If East Asian students' learning outcome as observed by Western educators is "uncritical" regurgitation of knowledge, it is logical to say that the repetitive learning used in their learning is likely to be rote-learning. If this argument is accepted, it is more rote-learning rather than memorising for understanding (MU1) that these Chinese learners are observed utilising. The Western teachers may confuse the act of repetitive learning as rote-memorising, but it is unlikely they also mistake deep learning outcome for uncritical, reproductive learning outcome.

Relation between learning approach and academic performance

The next logical question to ask is: How to explain the superior academic performance of East Asian students? From the interview data, we found students at university and TAFE, particularly western students, felt that examinations assessed mainly reproductive understanding and in the case of TAFE, predominantly surface understanding of the learning material. Kelvin claimed that answering an examination question was all about reproduction of the key points in an appropriate structure to satisfy teachers' expectation. In the excerpt

below, he described how he obtained excellent results by ‘rote-learning’ in his graduate diploma in education course.

“Basically how I prepare for examination is that I get the lecture notes, you just rote-learn, you just basically memorise.”

(Can a student get say an honour or even a distinction by using this way of learning?)

“I did that on a number of subjects, I got distinctions and high distinctions. Obviously I suppose I might have rote-learnt, but I was clever enough like when it came to writing essays, I was clever enough to put a little bit of argumentative stuffs in there. But I just basically rote-learnt facts and rote-learnt the answers and just went ‘bang, bang, bang’. It might sound very bad, but most the students actually got high distinction and distinctions for the ones they just learnt and regurgitated.” [Kelvin]

According to another student (Angus), examinations at TAFE assess even lower level of understanding.

“I found the styles of examination here lend themselves to that sort of thing because quite in exams we used to fill in the missing words from a definition in the book. So, in that case you don’t have to learn, you just have to memorise it. We have multiple-choice questions, which are taken straight out of the book so you don’t really have to learn it, if you can recognise it, you can do well. The essay, a situation you have to learn the basics, you need something for the essay, of course. I don’t know, the quality of the essays in the examination is just from memory. ... A lot of the subjects are structured (in such a way that) you can pass the subject quite easily just from memorising a few definitions.” [Angus]

If these students’ perceptions are accurate in that ‘rote-learning’ (interpreted as memorising of knowledge with reproductive or lower level of understanding) can get them good to excellent results, then this suggests that the usual deep/surface distinction of learning approaches may not be appropriate to predict examination performance. Scouller (Scouller, 1998), for example, found that deep learning approach was positively associated with essay performance, but *not* with MCQ examination results. The implication is that when East Asian students out-perform their Western counterparts in academic studies, this could be due to other reason than their utilisation of deep learning approach.

Towards explaining the academically superior results of East Asian students

To further examine the generally superior academic outcomes of East Asian learners, we refer the readers to a research by Bruce (1994) in which she identified 6 conceptions of learning held by university lecturers. Only three of them relevant to this discussion will be discussed here. They are:

Learning is seen as acquiring new knowledge (CL2)

Learning is seen as a cognitive experience (CL3)

Learning is seen as changing personal attitudes, beliefs or behaviour (CL5)

They represent a partial match with Marton et al’s (1994) six conceptions of learning and are illustrated below:

CL 2: “The actual transmission of the knowledge isn’t learning. ... (Learning) is the student actually acquiring and *taking on board* that knowledge or information.” Earlier he said: “I would hope that it was more an active thing.”

CL 3: “Learning is when they *take it into* their own cognitive structure and it becomes part of their cognitive structure ... I don’t really know how they construct it ... because it’s personal, isn’t it.”

CL 5: “I don’t think learning is just the acquisition of knowledge in the sense of *filling your head up* facts and figures and being able to regurgitate it in an examination. That’s part of it, if that knowledge doesn’t have some impact upon you in terms of making a difference to the way you view the world ... then it can become very sterile and not very change producing. ... Learning is about a broader realm of experience, ... broadening of the way you think.”
(Bruce, 1994)

These 3 conceptions, despite some being more sophisticated than the other and their different focusing on different temporal facets of learning, all have one important commonality. They all see that learning at the beginning stage involves taking in of knowledge – ‘taking on board’, ‘take it into’, ‘fill your head up’. Through some internal process, transformation occurs inside the learner, and the knowledge becomes internalised. While no lecturer (not even the one with CL 2) would agree learning is mechanical reproduction of knowledge in its unaltered form, they all see knowledge acquisition as an important first step towards developing of understanding by integration new knowledge to existing cognitive scheme.

Therefore what distinguishes lecturers’ conceptions of teaching and learning, is not their perception of what real learning (as outcome) should be (e.g. none agree rote-memorising is real learning). They differ instead in two other aspects:

- How they think they as teachers can facilitate learning to occur.
- The kind of outcome of learning to assess.

From the interview data, we observe a cultural difference here with regard to the first aspect, which together with the limitation posed by the second aspect, can provide a possible explanation of the academic superiority of East Asian students.

According to the perceptions of our East Asian students, teaching in their home country is teacher-centred and didactic process of knowledge transmission (Tang & Bain, 1994). As discussed earlier, the East Asian education philosophy puts the onus of obtaining understanding on the learner. On the other hand, teaching in Western society tends to be more student-centred. Teachers tend to use various learning experience/stimulants to motivate learning – learning by discovery and by constructing personal meanings, not by one-way transmission. This is at least what the East Asian students (both surface and deep learners) in this study perceived as happening in Australian universities in the general learning context.

“Sometimes the lecturers don’t tell you everything, they just ask you what do you want to find out, to research yourself. And that’s a good way to learn, I think, you discover the answer yourself. The knowledge, you found out yourself.” [Ami]

“I feel that Western students [are] unlike Oriental students; memorising to them is not very important. In Taiwan, there isn’t any semester presentation. There is only reciting texts.” [Annie]

The examination context, however, presents a very different picture. Despite recognising that learning should be an active process of integrating new knowledge, many teachers (Western and Chinese alike) do not have a clear idea of how knowledge development actually takes place, as the lecture holding CL2 said: “I don’t really know how they construct it” (quotation above). Thus, they tend to assess the ‘what’ aspect of learning which is easier to assess, rather than the ‘how’ aspect of learning, which they do not know much about. Therefore, as the students in this study revealed, exams assess only surface and/or reproductive understanding of the content. Assessment by examinations therefore does not ‘align’ with teaching/learning in the general learning context in Western society, which Western students in this study spoke negatively about.

“I think that when it comes to the end of the semester, everyone is really tired. ... just get this stuff in to my brain because I’m out of here in a week’s time. ... I think it can lend itself to memorising and rote-learning. ... But throughout the semester ... just building up that general knowledge and at the end you can be a little more specific. And you’re sort of studying *by two different methods*. It works for me. ... I think that works for nearly every student. It’s just the way that you *have to* do.” [Nicole]

“[The exams here are] very high quality.”

(What do you mean?)

“Sorry, I was joking, being sarcastic. ... I’d be happy to have more assignments, rather than an examination. I guess the exams do show you how much we’ve crammed in that last week for the examination rather than what we’ve learnt in the semester.”

[Angus]

“With an examination you learn and regurgitate basically. And with an assignment, ... it’s no good just quoting one textbook. And to a large extent, a lot of my better work has been assignments particularly the researches. ... I’d try to do it for the sake of giving myself skills, like research skills, preparation skills, argumentative skills. In terms of learning skills, and being what universities are supposed here for, assignments are the way. So, on a general level, I don’t think university should have exams as a means of assessment.” [Kelvin]

These Western students valued the daily experiential learning and have described real learning taking place. From their perception, it was not the totality of their learning experience throughout the semester that was assessed, but the limited knowledge they managed to remember and recall in the examination. They recognised and felt strongly about the misalignment between their general learning experiences and learning for examination (Biggs, 1996). As a result, they ‘have to’ use ‘two different methods’ to study. How about view of the East Asian students?

East Asian students also recognised and spoke about this misalignment. However, since they felt their daily learning as preparing themselves for the end-of-semester examination, there is *continuity* between their general learning approach and learning for examination. Moreover,

they (both deep and surface) are more used to utilising memorising strategies to learn for cultural and contextual reasons. *Given the nature of knowledge assessed*, their better memorising strategies can therefore better prepare them to tackle exams. Rex (below) described this sense of superiority.

“In daily learning, after reading a chapter, I know what it is about. Then when examination comes, there’d be more memorising of texts by rote, just like in Hong Kong. ... I think it’s the only way I can outperform the local students. It is the ability to rote-memorising to answer examination question that’s higher.” [Rex]

We argue that since the use of elaborative surface approach, rather than deep learning approach, is sufficient to obtain good to excellent examination results, East Asian students’ superior academic performance can be explained by their propensity to memorise knowledge often with a structure supplied by the text or lecturer. This elaborative surface approach is very similar to the ‘deep memorising’ and ‘narrow approach’ (Kember, 1996; Kember & Gow, 1989; Kember & Gow, 1991) identified among East Asian students in other studies. Therefore instead of deeper learners, we believe it is more correct to describe the East Asian students as efficient or strategic learners in the examination context.

Now if they are not deeper learners, how then to explain the reported better learning profiles of East Asian students (i.e. high in deep and low in surface in comparison to Western students) (Biggs, 1991; Watkins & et al., 1991) which has been consistently obtained in quantitative studies?

Learning profiles of East Asian versus Western students

Two explanations of this learning profile ‘superiority’ are offered here.

(1) Cultural Difference in focusing of learning for examination

As we have discussed in the last section, examination preparation, to both Western and East Asian students, is more an act of organising and memorising information for retrieval purpose than a meaning extraction process. Both groups feel that examination is to assess how well students can reproduce and or apply what they have learnt, rather how they have learn it. But this is where their similarity ends. From the interview data we observe that students in these two cultures have very different focusing on learning for examination. In learning for examination, the Western students take understanding for granted and emphasise knowledge reproduction as the salient feature of their act of examination preparation. On the other hand, since the Chinese students have been ‘trained’ (a term Rex used in the interview) to tackle numerous exams in their home countries, they take knowledge reproduction for granted, keeping the act of memorising at the background. Instead, they would emphasise the need to understand before memorising if they want better recall. Hence, their focusing is on more understanding, regardless of their learning approaches.

Most student learning inventories such as Study Process Questionnaire (SPQ), Approach to Study Inventory (ASI), are designed to measure students’ general approach to learning, not learning approaches in a specific learning context. In most tertiary institutes, end-of-semester exams have the highest weighting in determining their overall grade, therefore students tend to think of their experience of learning for exams when they read the terms ‘learning’,

‘memorising’ or ‘understanding’ in SPQ or other similar instruments. In the interview, despite the fact that Kelvin was a deep learner and used an elaborative deep approach for examination, he frequently described his way of learning for examination as ‘rote-learning’. In sharp contrast, Annie, a surface learner, frequently mentioned ‘understanding’ in her revision for examination as a way to facilitate memorising, although it was mostly surface understanding that she was referring to. It is therefore possible that since she feels that she ‘understands’ instead of ‘rote-learns’ the material for examination, she will likely answer the questionnaire accordingly. This suggests an explanation as why the SPQ and ASI tend to give the East Asian learners a healthier learning profile than Western students.

(2) Cultural difference in interpretation of key terms

A second possible explanation is the cultural difference in interpretation of some keys terms or concepts used in the questionnaire. Only a brief example is discussed here. ‘Personal satisfaction’ in item 2 of Biggs’ SPQ, is supposed to signify and measure deep motivation - intrinsic satisfaction obtained from deep understanding. In the East Asian context, achievement in education has a strong connotation of parental and social expectation and personal obligation; therefore extrinsic reward (e.g. ‘good marks’) can induce a strong sense of ‘personal satisfaction’, as Min, an Asian immigrant, reported below:

(How would you interpret ‘personal satisfaction’ in item 2?)

“You’ve achieved something because you did it on your own, work hard to do it, ... and you achieved good marks.” [Min]

To Min, ‘personal satisfaction’ is derived more from a high mark than intrinsic value of understanding. If this cultural difference generally exists in students’ interpretation of similar key terms and concepts, the instrument may end up measuring different constructs in different cultures. A direct comparison of their scale scores to reflect their learning styles, may therefore not be justified.

Conclusion

The interview data reveals misalignment between the general learning experience and learning for exams in the western learning context at the tertiary level. Western and East Asian students respond to this misalignment differently because of the latter’s propensity to utilise memorising strategies in their general study. For East Asian students, this study found that there is continuity between general learning and learning for examination. Also due to cultural difference, they are more likely to learn by committing to memory material that they do not understand. This act of memorising is for understanding, and is *not* rote-memorising. However, this continuity between memorising and understanding only shows that repetitive learning should not be generally equated with rote-learning. It, however, cannot dismiss as a misinterpretation Western educators’ observation of the uncritical, reproductive learning outcome of East Asian students, reported in other studies.

In this study three memorising strategies in the examination context are distinguished, representing increasing complexity of the structure of the knowledge object that reflects the type of understanding the student has achieved. We also found from students’ perceptions that exams mainly assess reproductive and/or surface understanding. Based on these observations, this paper argues that the superior academic results of East Asian students has

to be understood in the context of misalignment of general learning and learning for examinations, rather than as the outcome of their employment of a deep learning approach. Moreover, as a result of this misalignment, Western and East Asian students focus on different aspects of their learning for examinations. Together with the possible cultural difference in interpretation of key terms in student learning inventories, this provides an explanation the better learning profiles of East Asian students.

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